

Policy Drivers and Challenges for Ethanol Use In Transportation and Production in California

**Rice Straw Products Expo 2004
Sacramento Convention Center
California
August 9, 2004**

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Topics

- Background
- Ethanol Supply and Demand
- California's Request for Oxygen Waiver
- Policy Drivers for Use of Ethanol
- Challenges and Opportunities
- California Ethanol Information

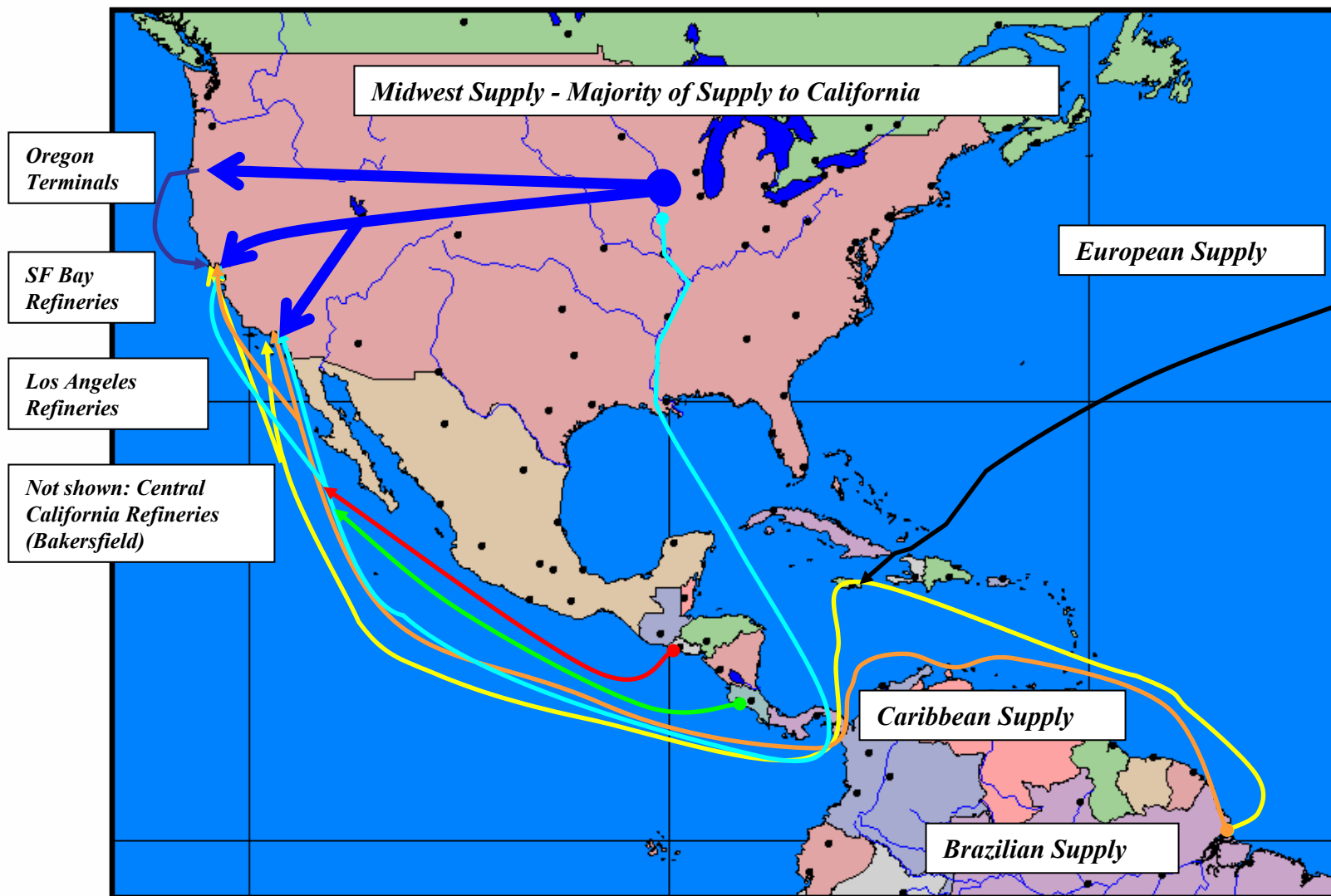


Background

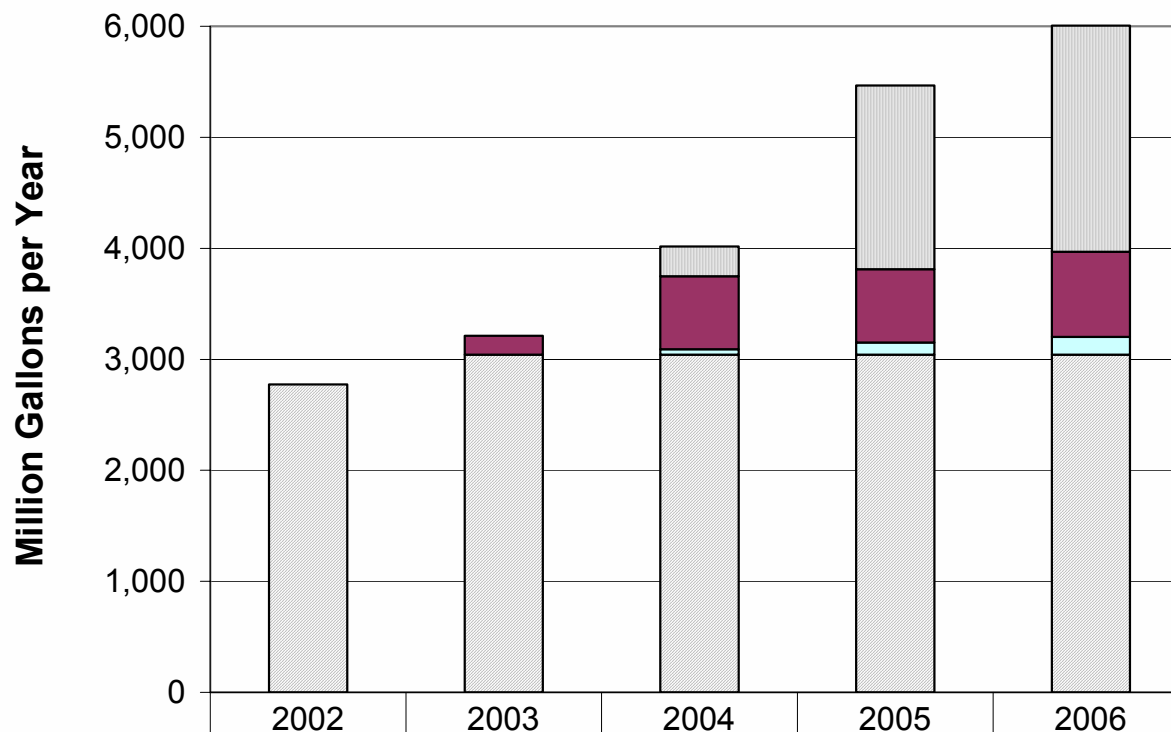
- Primary energy use for ethanol is transportation
- California phases out MTBE use by 1/01/04
- Ethanol is the only oxygenate approved for use in California gasoline
- California is now the largest ethanol consuming state in the nation
 - Demand will approach one billion gallons in 2004
- California produces less than 10 million gallons of ethanol each year



Ethanol Sources and Transportation



Projected USA Ethanol Capacity @ End of Year



Planned	0	0	270	1655	2037
Under Construction	0	170	657	657	767
Expansions of Existing			50	112	161
Existing (as of 10/03)	2773	3041	3041	3041	3041

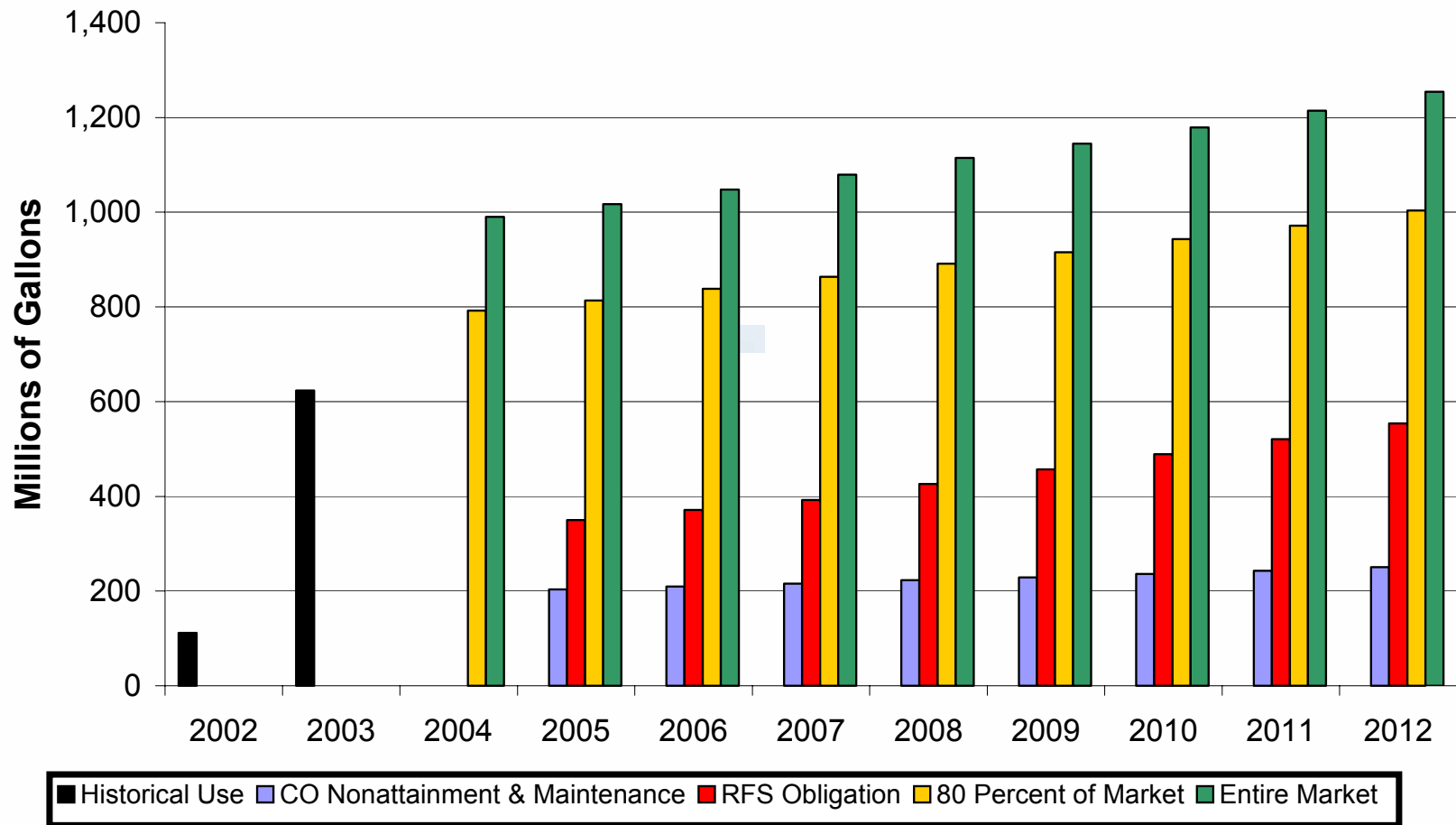


Request to U.S. EPA from Minimum 2% Oxygen Content Waiver

- Governor Schwarzenegger states on 1/29/04:
 - *"I recognize the benefit of one aspect of the Clean Air Act (CAA) oxygen requirement — the dramatically increased use of ethanol. However, due to the ban on MTBE use, there will be a very large ethanol market in California even without the CAA oxygen mandate."*
 - *"California is also considering various mechanisms to spur-in-state ethanol production so that our citizens and our economy benefit directly from the State's increased use of ethanol as a gasoline blending component."*



Projected California Ethanol Use High Case Gasoline Demand - 3 Percent Per Annum



Policy Drivers

- 1) Federal energy tax policy (since 1978) makes ethanol competitive with gasoline
- 2) Federal law requires minimum 2 percent by weight oxygen content in all reformulated gasoline (RFG) regions
- 3) Federal winter oxygenated fuels program to reduce carbon monoxide emissions in the South Coast Air Basin and parts of Imperial County
- 4) California Environmental Policy Council determines ethanol as acceptable substitute for MTBE (2000)
- 5) Reduce demand for on-road gasoline and diesel 15 percent below the 2003 level by 2020 and maintain that level for the foreseeable future
- 6) Increase the use of non-petroleum fuels to 20 percent by 2020 and 30 percent by 2030



Uncertainties and Challenges Facing Ethanol Use in California

- Federal Energy Legislation???
- Outcome of California's request for oxygen waiver
- Future California fuel specifications under consideration
 - Sulfur reductions from 20 parts per million (ppm) to 5ppm
 - Oxygen (% weight) reduced from 2% to 0
 - Reid Vapor Pressure from 7.0 psi to 6.5 psi
- Role of higher use of ethanol-blended gasoline on increased emissions of volatile organic compounds.
 - Results of study for Air Resources Board forthcoming on permeation effects of ethanol through hoses and fuel system components
- Current CARB "Predictive Model" for determining acceptable gasoline formulations includes a constraint on 10% ethanol-gasoline blends (Nox penalty) – model parameters scheduled for review/possible revision in 2005



Opportunities for Greater Use of Ethanol in California

- Growing transportation fuel market
- Large agricultural sources as well as cellulosic wastes and residues for making ethanol
- E-10 blends
- E-85 market
- Ethanol/Diesel blends



For More Information about Ethanol

- California Energy Commission's Website at:
 - www.energy.ca.gov/ethanol
 - www.energy.ca.gov/pier/renew/ethanol
- Energy Commission Reports:
 - *Ethanol Fuel Incentives Applied in the U.S. – Reviewed from California's Perspective (1/04)*
 - *Ethanol Supply Outlook for California (10/03)*
 - *2002 Update of U.S. Ethanol Industry Production Capacity Outlook Report (7/03)*
 - *U.S. Ethanol Industry Production Capacity Outlook (8/01)*
 - *Costs and Benefits of a Biomass-to-Ethanol Production Industry in California (3/01)*
 - *Evaluation of Biomass-to-Ethanol Fuel Potential in California (12/99)*

